PATENT
Attorney Docket No. 33604/US/2
Dorsey Matter No. 463077-246

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Desjarlais, *et al.*

Serial No. 10/677,093

Filed: September 30, 2003

For: *Novel Proteins With Antiviral, Antineoplastic, and/or Immunomodulatory Activity*

Group No. 1647

Examiner: Shulamith Shafer

AMENDMENT AND RESPONSE TO RESTRICTION REQUIREMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This paper is submitted in response to the Office Action mailed July 12, 2006.

Although the Applicants do not believe any additional fees are required, the Commissioner is authorized to charge any additional fees, including extension fees or other relief, which may be required, or credit any overpayment to Deposit Account No. 50-2319 (Our Order 33604/US/2 463077-246).

Listing of Claims start on page 2.

Remarks start on page 3.

Listing of the Claims

1. (Original) A type 1 interferon (IFN) comprising antiviral, antineoplastic or immunomodulatory activity similar to a naturally occurring interferon, wherein said IFN has been circularly permuted or cyclized and is selected from the group consisting of SEQ ID NOS:35-49~~has at least one modulated characteristic as compared to the naturally occurring interferon~~.

2. – 6. (Cancelled)

7. (Currently amended, withdrawn) A type 1 interferon (IFN) comprising antiviral, antineoplastic or immunomodulatory activity similar to a naturally occurring interferon, wherein said IFN has been circularly permuted or cyclized and ~~An IFN according to claim 5, wherein said circularly permuted interferon~~ is selected from ~~Figure 1,~~ the group consisting of SEQ ID NOS:19-34.

8. – 10. (Cancelled)

11. (Original) An IFN according to claim 1, wherein said IFN is further chemically modified.

12. (Currently Amended) An IFN according to claim [9] 11, wherein said chemical modification is glycosylation or PEGylation.

13. – 18. (Withdrawn)

19. (Original) An IFN composition comprising a pharmaceutically acceptable carrier and an IFN of claim 1.

REMARKS

Reconsideration is respectfully requested.

Claim 1 is amended. Claims 1, 7, 11, 12 and 19 are pending. Claims 2-6 and 8-10 are cancelled. Claims 13-18 are withdrawn. Support for the amendments is found in the specification.

Objections

Claims 3 and 5 are objected to as encompassing non-elected inventions. Claims 3 and 5 have been cancelled, rendering this objection moot.

Rejection Under 35 U.S.C. § 112, Second Paragraph

Claims 1-5, 8, 11 and 19 are rejected under 35 U.S.C. § 112, Second Paragraph as being indefinite. Specifically, the word "modulated" was objected to as reading on any circular permutein. The word "modulated" has been deleted from claim 1. Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 112.

Rejection Under 35 U.S.C. § 103(a)

Claims 1-5, 8, 11 and 19 are rejected under 35 U.S.C. § 103(a) as being obvious over Pastan et al. (2000, US Patent No. 6,011,002) in view of Radhakrishnan et al. (1999, J Mol. Biol. **286**:151-162). Specifically, the Office Action states that Pastan teaches a method of making a circularly permuted protein ligand and that the term ligand encompasses cytokines. Radhkrishnan teaches the crystal structure of interferon (IFN) tau (IFN-τ). Applicants have cancelled claims 2-5 and 8, rendering rejection of these claims moot.

Applicants have amended claim 1 to recite specific sequences of circularly permuted IFN that contain specific permutation cites and specific linker amino acids.

To render the claims obvious, the references in combination much teach every limitation of the claimed invention. However, neither Pastan nor Radhakrishnan recites the claimed SEQ ID Nos of claim 1. Neither reference teaches a linker required in each of the claimed SEQ ID Nos. For example, in Figure 2, Pastan teaches a GGNGG linker, whereas SEQ ID NO:35 of the present invention requires a GD linker. As another example in the specification is SEQ ID NO:34, which contain a QNTKS linker. The linker for SEQ ID NO:35 was chosen from PDB code 1HBG, residues G74-D75. (See ¶ [0045] in US Pub 2004/0175359.) The linker for SEQ ID NO:34 was chosen from chain B in PDB code 1D5S, residues Q377-N378-T379-K380-S381. (See ¶ [0044]) Likewise, Radhakrishnan fails to teach the claimed linker.

Further, neither reference provides the requisite motivation or suggesting to make an undisclosed linker sequence. There are 64 million possible linkers of five amino acids in length. The references in combination fail to provide the requisite motivation or suggestion to choose the specifically claimed linker from among the milieu of possible linker sequences.

Finally, the references, in combination, fail to provide the requisite expectation of success for one of skill in the art to make an undisclosed linker.

For all the reasons above, Applicants respectfully request withdrawal of this rejection.

Conclusion

The present Application is therefore in condition for allowance. Applicants respectfully request immediate notification thereof. The Examiner is invited to contact the undersigned at (415) 781-1989 if any issues may be resolved in that manner.

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Respectfully submitted,
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Filed under 37 C.F.R. §1.34